

In the Specification

Page 1, line 4, insert

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. Application Serial No. 08/764,340 filed December 12, 1996.

Page 20, line 6, after "i.e" insert --.--.

Page 24, line 9, change "burst" (after AGC) to --field--.

In the Claims

Cancel claims 1-20 without prejudice or disclaimer to the subject matter recited therein.

Add the following claims:

Subj 47. A disk drive, comprising:
1 a disk having a plurality of concentric tracks for storing data, the tracks including
2 a first track having a first data pattern with a first frequency, a second data pattern with a
3 second frequency that is higher than the first frequency, an AGC field and a burst field,
4 wherein one of the first and second data patterns is located in one of the AGC and burst
5 fields;

6 a head for reading data from and writing data to the disk; and
7 a detection circuit that determines whether the head is within an acceptable flying
8 height range in response to the first and second data patterns.

1 48. The disk drive of claim 47, wherein the first data pattern is located in the
2 AGC field.

1 49. The disk drive of claim 48, wherein the second data pattern is located in
2 the AGC field.

1 50. The disk drive of claim 47, wherein the second data pattern is located in
2 the burst field, and the burst field is used primarily during seek and settling operations.

1 51. The disk drive of claim 47, wherein the second data pattern is located in
2 the burst field, and the burst field is exclusively used to determine whether the head is
3 within an acceptable flying height range.

1 52. The disk drive of claim 51, wherein the burst field is continuous and
2 extends across all tracks on a surface of the disk.

1 53. The disk drive of claim 47, wherein the first data pattern is located in the
2 ACG field and the second data pattern is located in the burst field.

1 54. The disk drive of claim 53, wherein the burst field is one of a C burst field
2 and a D burst field.

1 55. The disk drive of claim 54, wherein the track includes an A burst field and
2 a B burst field between the first and second data patterns.

1 56. The disk drive of claim 55, wherein the A, B, C and D burst fields are
2 located in a single servo region, the A and B burst fields are used primarily during track
3 following operations, and the C and D burst fields are used primarily during seek and
4 settling operations.

Sub 4

57. A disk drive, comprising:
2 a disk having a plurality of concentric tracks for storing data, the tracks including
3 a first track having a data pattern;
4 a head for reading data from and writing data to the disk; and
5 a detection circuit that determines whether the head is within an acceptable flying
6 height range in response to a peak count of a detection signal based on the data pattern.

Untd
B2

58. The disk drive of claim 57, wherein the data pattern is a constant
2 frequency pattern.

59. The disk drive of claim 57, wherein the data pattern is a random pattern.

60. The disk drive of claim 57, wherein the data pattern is a linearly increasing
2 frequency pattern.

Sub DS
61. The disk drive of claim 57, wherein detection circuit includes a transition
2 detector, a counter, and a memory.

62. The disk drive of claim 61, wherein the transition detector detects a
2 transition in the detection signal only when the detection signal exceeds a predetermined
3 threshold value.

63. The disk drive of claim 62, wherein the counter counts the number of
2 transitions in the detection signal detected by the transition detector and provides the peak
3 count.

Sub
D 1

2 64. The disk drive of claim 63, wherein the memory provides a calibration
3 value corresponding to a data storage location on the track that is accessed during one of
a read and write operation while the data pattern is read to provide the detection signal.

1 65. The disk drive of claim 64, wherein the detection circuit determines
2 whether the head is within an acceptable flying height range in response to the peak count
3 and the calibration value.

1 66. The disk drive of claim 65, wherein the detection circuit postpones the
2 operation if the detection circuit determines that the head is not within an acceptable
3 flying height range.

15 Sub D7) 67. A disk drive, comprising:
2 a disk having a plurality of concentric tracks for storing data, the tracks including
3 a first track having a random data pattern;
4 a head for reading data from and writing data to the disk; and
5 a detection circuit that determines whether the head is within an acceptable flying
6 height range in response to a peak count that is based on the random data pattern and is
7 substantially proportional to the flying height of the head.

1 68. The disk drive of claim 67, wherein the random data pattern is determined
2 by empirical methods.

1 69. The disk drive of claim 67, wherein the random data pattern is located in
2 an AGC field.

1 70. The disk drive of claim 67, wherein the peak count is directly proportional
2 to the flying height of the head.

1 Sub D8) 71. The disk drive of claim 67, wherein detection circuit includes a transition
2 detector, a counter, and a memory.

1 72. The disk drive of claim 71, wherein the transition detector detects a
2 transition in a detection signal based on the random data pattern only when the detection
3 signal exceeds a predetermined threshold value.

1 73. The disk drive of claim 72, wherein the counter counts the number of
2 transitions in the detection signal detected by the transition detector and provides the peak
3 count.

1 *Subj* 74. The disk drive of claim 73, wherein the memory provides a calibration
2 value corresponding to a data storage location on the track that is accessed during one of
3 a read and write operation while the random data pattern is read to provide the detection
4 signal.

1 *ent'd B7* 75. The disk drive of claim 74, wherein the detection circuit determines
2 whether the head is within an acceptable flying height range in response to the peak count
3 and the calibration value.

1 76. The disk drive of claim 75, wherein the detection circuit postpones the
2 operation if the detection circuit determines that the head is not within an acceptable
3 flying height range.

Sub D10
2 77. A disk drive, comprising:
a disk having a plurality of concentric tracks for storing data, the tracks including
3 a first track having a linearly increasing frequency data pattern;
4 a head for reading data from and writing data to the disk; and
5 a detection circuit that determines whether the head is within an acceptable flying
6 height range in response to a linearly increasing frequency data pattern.

Sub B2
1 78. The disk drive of claim 77, wherein the linearly increasing frequency data
2 pattern is located in an ACG field.

1 79. The disk drive of claim 77, wherein the linearly increasing frequency data
2 pattern is located in a servo burst pattern.

1 80. The disk drive of claim 77, wherein the linearly increasing frequency data
2 pattern is located in a burst pattern that is continuous and extends across all tracks on a
3 surface of the disk.

Sub D11
1 81. The disk drive of claim 77, wherein detection circuit includes a transition
2 detector, a counter, and a memory.

1 82. The disk drive of claim 81, wherein the transition detector detects a
2 transition in a detection signal based on the linearly increasing frequency data pattern
3 only when the detection signal exceeds a predetermined threshold value.

1 83. The disk drive of claim 82, wherein the counter counts the number of
2 transitions in the detection signal detected by the transition detector and provides the peak
3 count.

1 84. The disk drive of claim 83, wherein the memory provides a calibration
2 value corresponding to a data storage location on the track that is accessed during one of
3 a read and write operation while the linearly increasing frequency data pattern is read to
4 provide the detection signal.

Intel 82

1 85. The disk drive of claim 84, wherein the detection circuit determines
2 whether the head is within an acceptable flying height range in response to the peak count
3 and the calibration value.

1 86. The disk drive of claim 85, wherein the detection circuit postpones the
2 operation if the detection circuit determines that the head is not within an acceptable
3 flying height range.

Claim 87

1 87. A disk drive, comprising:
2 a disk having a plurality of concentric tracks for storing data, the tracks including
3 a first track having a first data pattern with a first frequency and a second data pattern
4 with a second frequency that is higher than the first frequency;
5 a head for reading data from and writing data to the disk; and
6 a detection circuit that determines whether the head is within an acceptable flying
7 height range in response to the first and second data patterns while the head is at a
8 substantially constant flying height and independently of flying height data obtained from
9 the disk drive at other than the substantially constant flying height.

1 88. The disk drive of claim 87, wherein the second data pattern is a constant
2 frequency pattern.

1 89. The disk drive of claim 87, wherein the second data pattern is a random
2 pattern.

1 90. The disk drive of claim 87, wherein the second data pattern is a linearly
2 increasing frequency pattern.

1 91. The disk drive of claim 87, wherein the second data pattern is located in an
2 AGC field.

1 92. The disk drive of claim 87, wherein the second data pattern is located in a
2 servo burst field.

1 93. The disk drive of claim 87, wherein the detection circuit determines
2 whether the head is within an acceptable flying height range independently of flying
3 height data obtained from the disk drive at a predetermined flying height.

1

Sub
D13

94. The disk drive of claim 87, wherein the detection circuit includes a
2 transition detector, a counter, and a memory.

1

95. The disk drive of claim 94, wherein the transition detector detects a
2 transition in a detection signal based on the second data pattern only when the detection
3 signal exceeds a predetermined threshold value, the counter counts the number of
4 transitions in the detection signal detected by the transition detector and provides a peak
5 count, the memory provides a calibration value corresponding to a data storage location
6 on the track that is accessed during one of a read and write operation while the first and
7 second data patterns are read, and the detection circuit determines whether the head is
8 within an acceptable flying height range in response to the peak count and the calibration
9 value.

1

96. The disk drive of claim 95, wherein the detection circuit postpones the
2 operation if the detection circuit determines that the head is not within an acceptable
3 flying height range.

560 C2

Weld G

1 97. A disk drive, comprising:
2 a disk having a plurality of concentric tracks for storing data, the tracks including
3 a first track having a first data pattern with a first frequency and a second data pattern
4 with a second frequency that is higher than the first frequency;
5 a head for reading data from and writing data to the disk; and
6 a detection circuit that determines whether the head is within an acceptable flying
7 height range in response to the first and second data patterns while the head is at a
8 substantially constant flying height and independently of flying height data obtained from
9 the disk drive at a predetermined flying height.

1 98. The disk drive of claim 97, wherein the second data pattern is a constant
2 frequency pattern.

1 99. The disk drive of claim 97, wherein the second data pattern is a random
2 pattern.

1 100. The disk drive of claim 97, wherein the second data pattern is a linearly
2 increasing frequency pattern.

1 101. The disk drive of claim 97, wherein the second data pattern is located in an
2 AGC field.

1 102. The disk drive of claim 97, wherein the second data pattern is located in a
2 servo burst field.

1 103. The disk drive of claim 97, wherein the detection circuit determines
2 whether the head is within an acceptable flying height range independently of flying

3 height data obtained from the disk drive at other than the substantially constant flying
4 height.

*1 Sub
2 Dly* 104. The disk drive of claim 97, wherein the detection circuit includes a
2 transition detector, a counter, and a memory.

*1 Sub
2 Dly* 105. The disk drive of claim 104, wherein the transition detector detects a
2 transition in a detection signal based on the second data pattern only when the detection
3 signal exceeds a predetermined threshold value, the counter counts the number of
4 transitions in the detection signal detected by the transition detector and provides a peak
5 count, the memory provides a calibration value corresponding to a data storage location
6 on the track that is accessed during one of a read and write operation while the first and
7 second data patterns are read, and the detection circuit determines whether the head is
8 within an acceptable flying height range in response to the peak count and the calibration
9 value.

106. The disk drive of claim 105, wherein the detection circuit postpones the
2 operation if the detection circuit determines that the head is not within an acceptable
3 flying height range.